IUID Tips

NSWC Corona IUID Center
6 April 2010

NSWC Corona IUID Center

Implementation Assistance

Consumer Reports

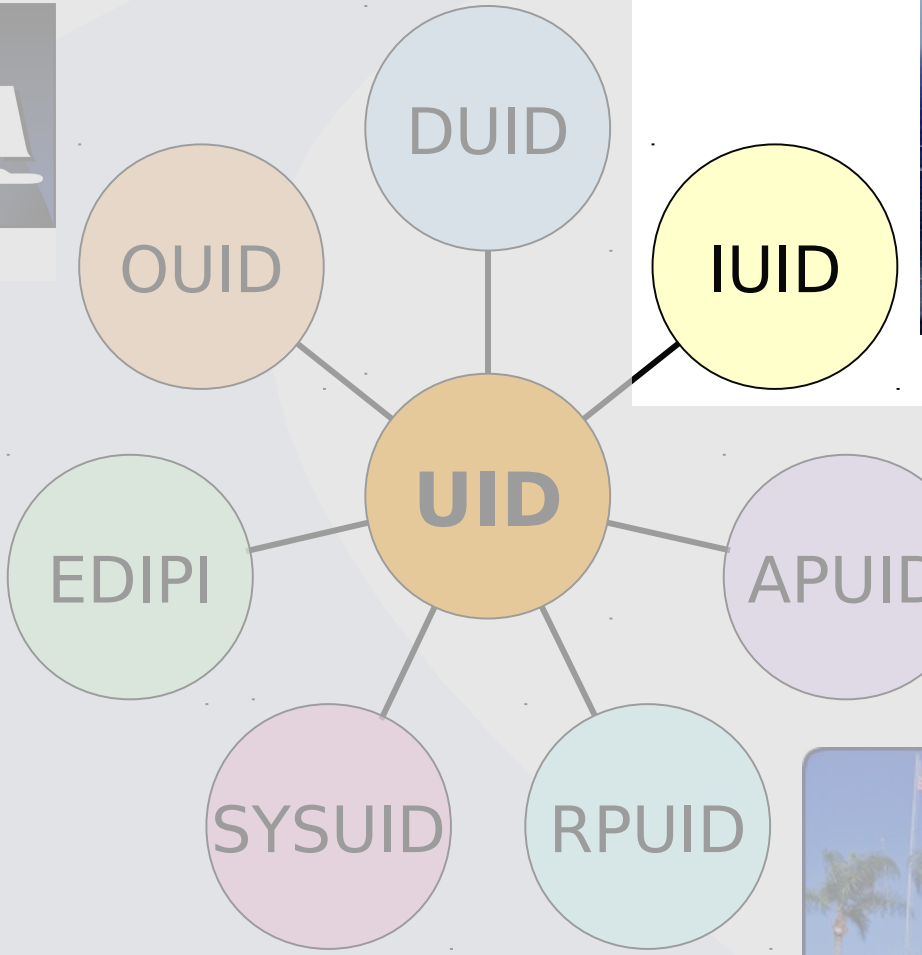
IUID Community

Innovation

Training

Our mission is to provide expertise in mission-focused lifecycle management through IUID integration.

The World of Unique Identification (UID)



Item Unique Identification

IUID is most simply thought of as a barcode

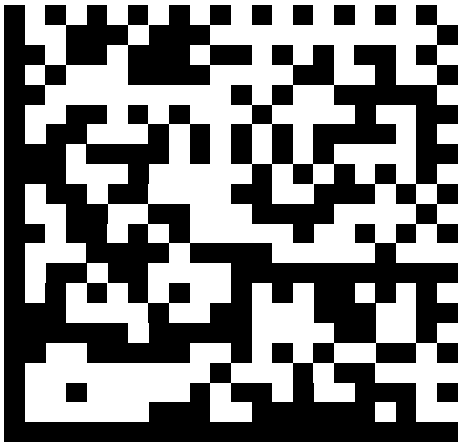
A…

Permanent,

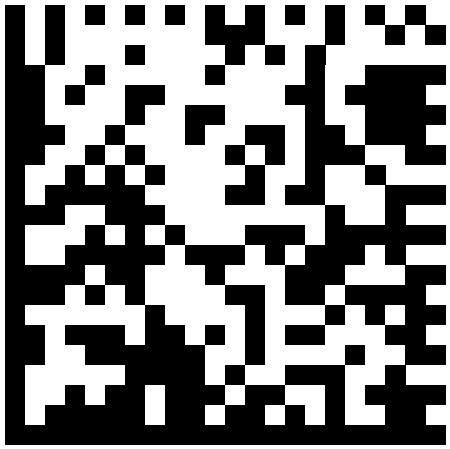
Completely unique,

Never changing

…Barcode



Can You Spot the IUID?



Each one is a data matrix, but only one is an IUI

An IUID is always a data matrix

A data matrix is <u>not</u> always an IUID

A Tale of Two Constructs

What's an EID?
Identifies the organization ensuring the uniqueness of the UII

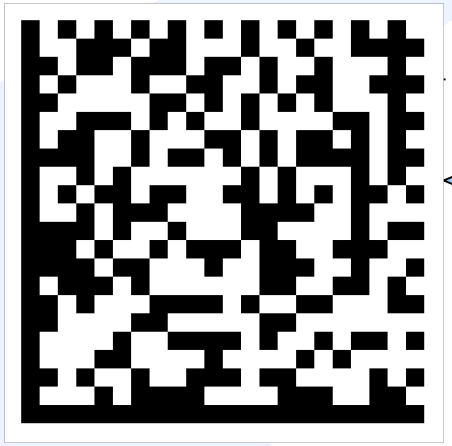
Construct #1: Serialized within the enterprise identifier (EID)
Contains the EID and the serial number (no part number)

Construct #2: Serialized within the part number
Contains the EID, part number, and serial number

There are three permitted format codes for either construct

The format code determines the semantics of the encoded string

Turning a Data Matrix into an IUID



The right information encoded into the right kind of mark

Syntax

[)>[R]/[S]06[G]/[S]7LN41164[G]/[S]1PT123[G]/[S]S531[R]/[S][E][O][T]

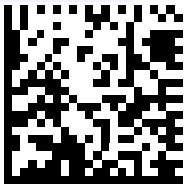
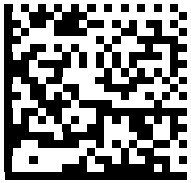
Format Code:
Data Identifiers:
Enterprise Identifier:
Part Number:
Serial Number:

Unique Item Identifier (UII) : LDN41164T1

IUID Data Constraints

- Must be encoded into an ECC200 Data Matrix 2-D barcode
- Must include syntax from ISO/IEC 15434
- Must include appropriate semantics
- UII ≤ 50 characters
- A through Z 0 through 9 / -
  - *no lower case letters, periods, asterisks,*
- The UII must be unique across DoD
- The UII must be "permanent"

Vocabulary Lesson

- **UID *Unique Identification***
- **IUID *Item Unique Identification***
- **UII *Unique Item Identifier***
  - LDN41164T123531
- **Data Matrix** 
- **IUID Compliant Data Matri** 
- **IUID Compliant Data Matrix Encoded String**

[)>$_{R}$/$_{S}$06$_{G}$/$_{S}$7LN41164$_{G}$/$_{S}$1PT123$_{G}$/$_{S}$S531$_{R}$/$_{S}$$_{E}O_{T}$

Reading vs. Verifying Marks

The vocabulary of IUID distinguishes "reading," "verifying," and "validating"

Reading the mark decodes the text in the mark.

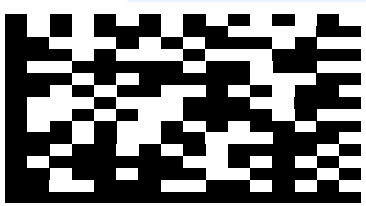
Verifying the mark ensures the quality of the mark meets the standards for contrast, squareness, straight edges, etcetera.

Validating the mark makes sure all of the correct ASCII characters that ought to be in the mark are in the mark. It makes sure that all the illegal characters that shouldn't be in the mark aren't. It makes sure

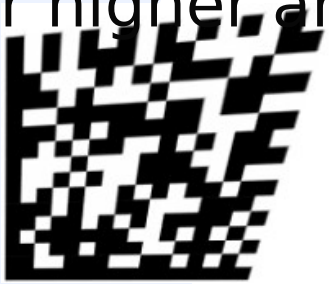
Verification

Verification grades (“A”–“F”) eight characteristics of the mark

Grades of “B” or higher are required to pass the mark

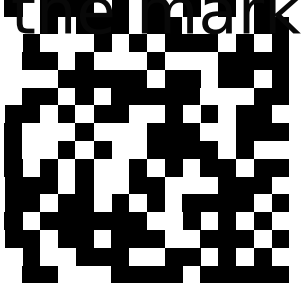


Axial Non-uniformity



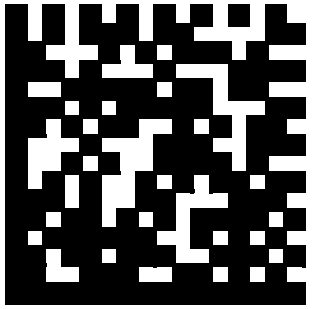
Grid Non-uniformity

Unused Error Correction

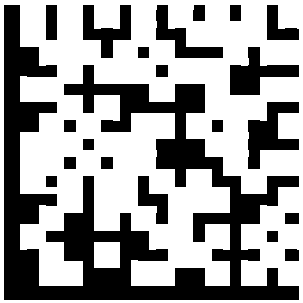


Fixed Pattern Damage

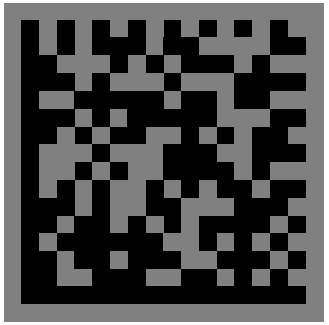
Modulation



Over-print



Under-print



Contrast

A Readable, Failing Mark

UNDER PRINT

OVER PRINT

CLOCKING PATTERN DAMAGE

FINDER PATTERN DAMAGE

Readability Of The Mark

Hard Read		Easy Read
	Contrast	
	Shape	
	Cell Size	
	Reflectance	

Expensive Readers

Cheap Readers

…Verified!

ns & Outs of IUID Specifications for Contracts

Can specify…

…mark shall be read in full sunlight

…mark shall be read by a {fill in name of barcode scanner here}

…mark shall be placed {fill in somewhere convenient to read here}

…mark shall be readable after rubbing the mark with a hydraulic-
fluid-dipped thumb

…mark shall be readable after {fill in some overhaul procedure here}

Cannot specify…

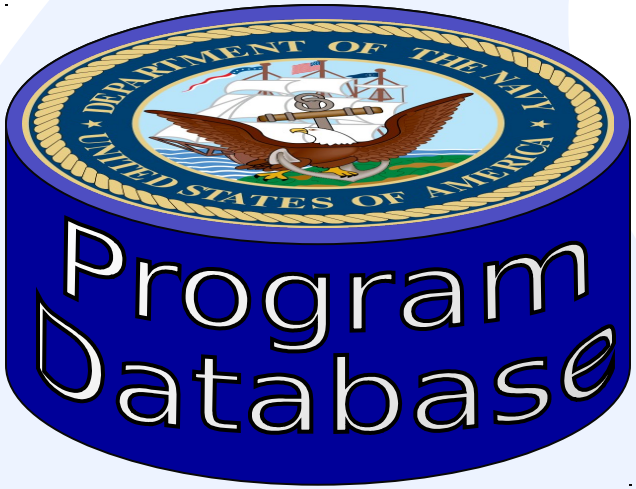
…what data to put into the mark

The IUID Registry

UNCLASSIFIED

Contains all the data/information the Program needs

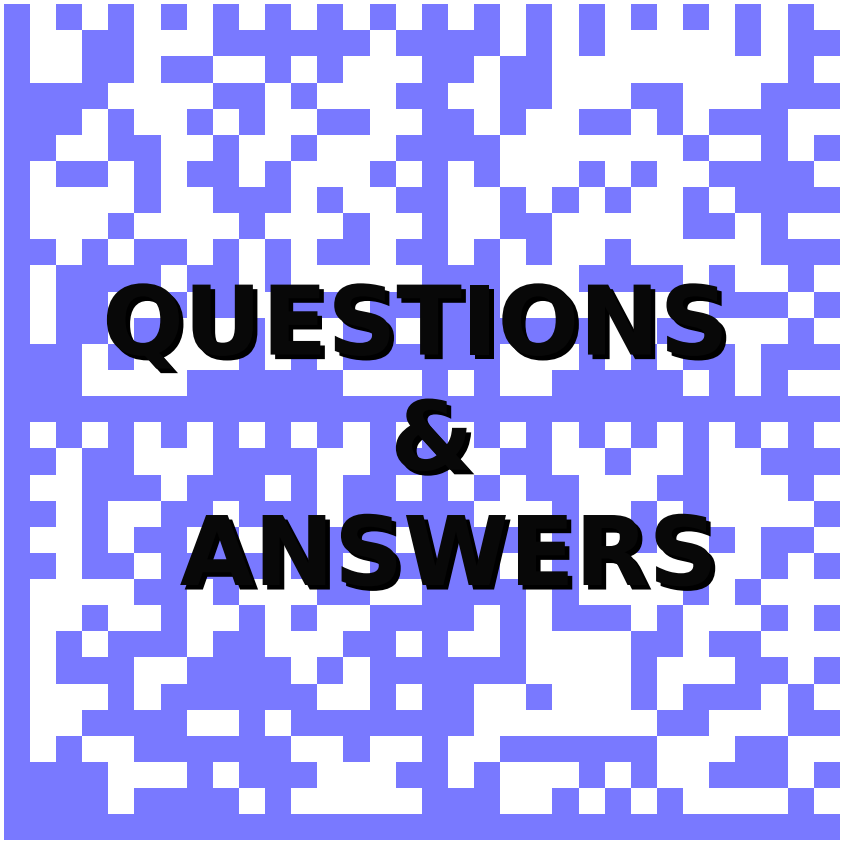
- ~~Location~~
- ~~Condition~~



Limited to the Program
Feeds the IUID Registry

Spans all DOD
Ensures uniqueness

UNCLASSIFIED


QUESTIONS
&
ANSWERS

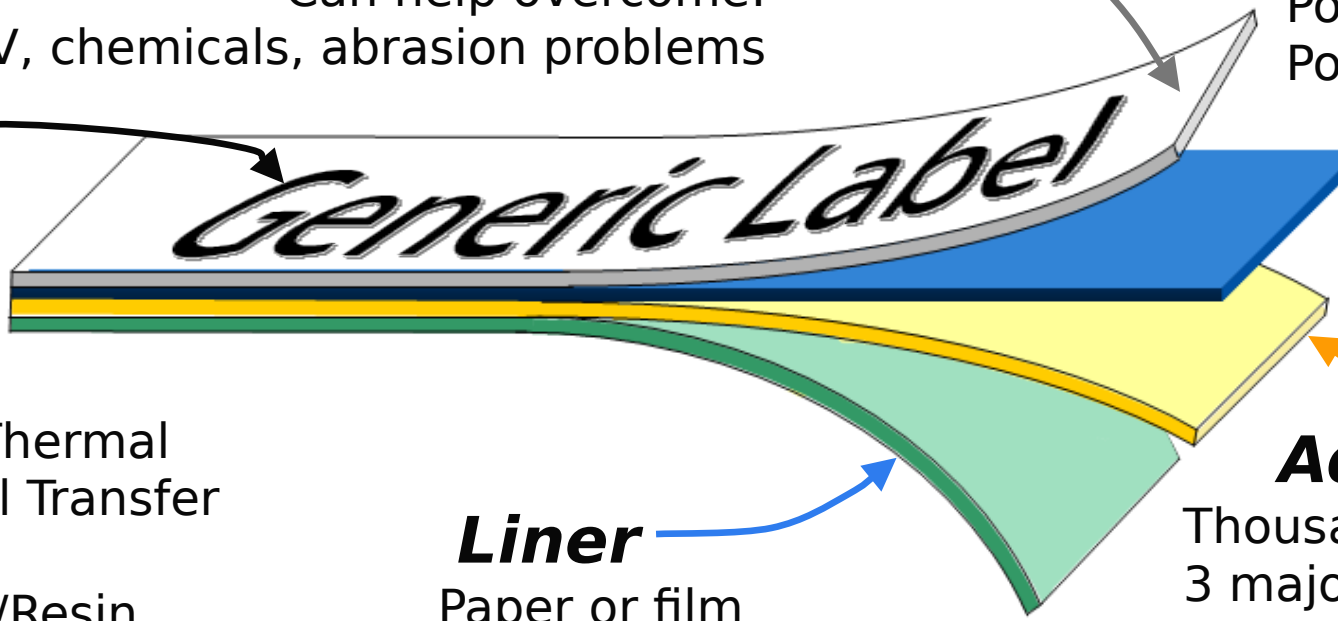
Anatomy of a Label

Top Coat

Optional layer
Added by the manufacturer,
Can help overcome:
UV, chemicals, abrasion problems

Face Stock

Paper
Polypropylene
Polyester
Polyolefin



"Ink"

Inkjet
Toner
Direct Thermal
Thermal Transfer
- Wax
- Wax/Resin
- Resin

Direct Laser

Liner

Paper or film
Moisture stability important to minimize edge curl
Comes with release coating

Adhesive

Thousands of choices
3 major categories
- Rubber PSA
- Acrylic PSA
- Silicone PSA

Automatic Identification Technology (AIT)

1-D Barcode

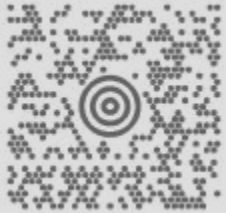
1D Barcode

Contact Memory Buttons

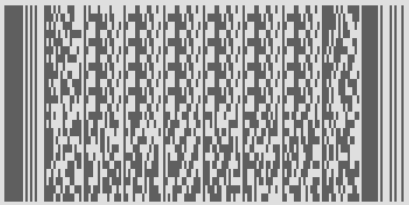
2-D Barcodes

Data Matrix

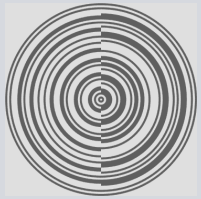
QR Code



MaxiCode



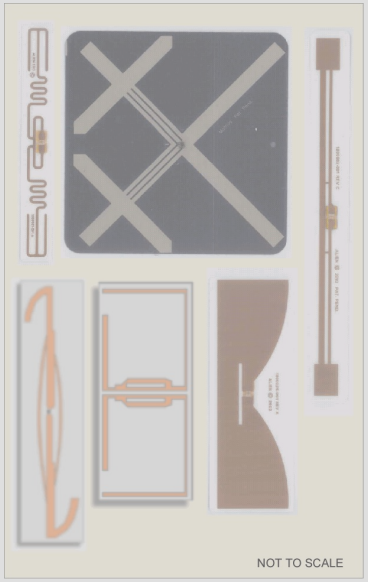
PDF417



Bullseye

Aztec

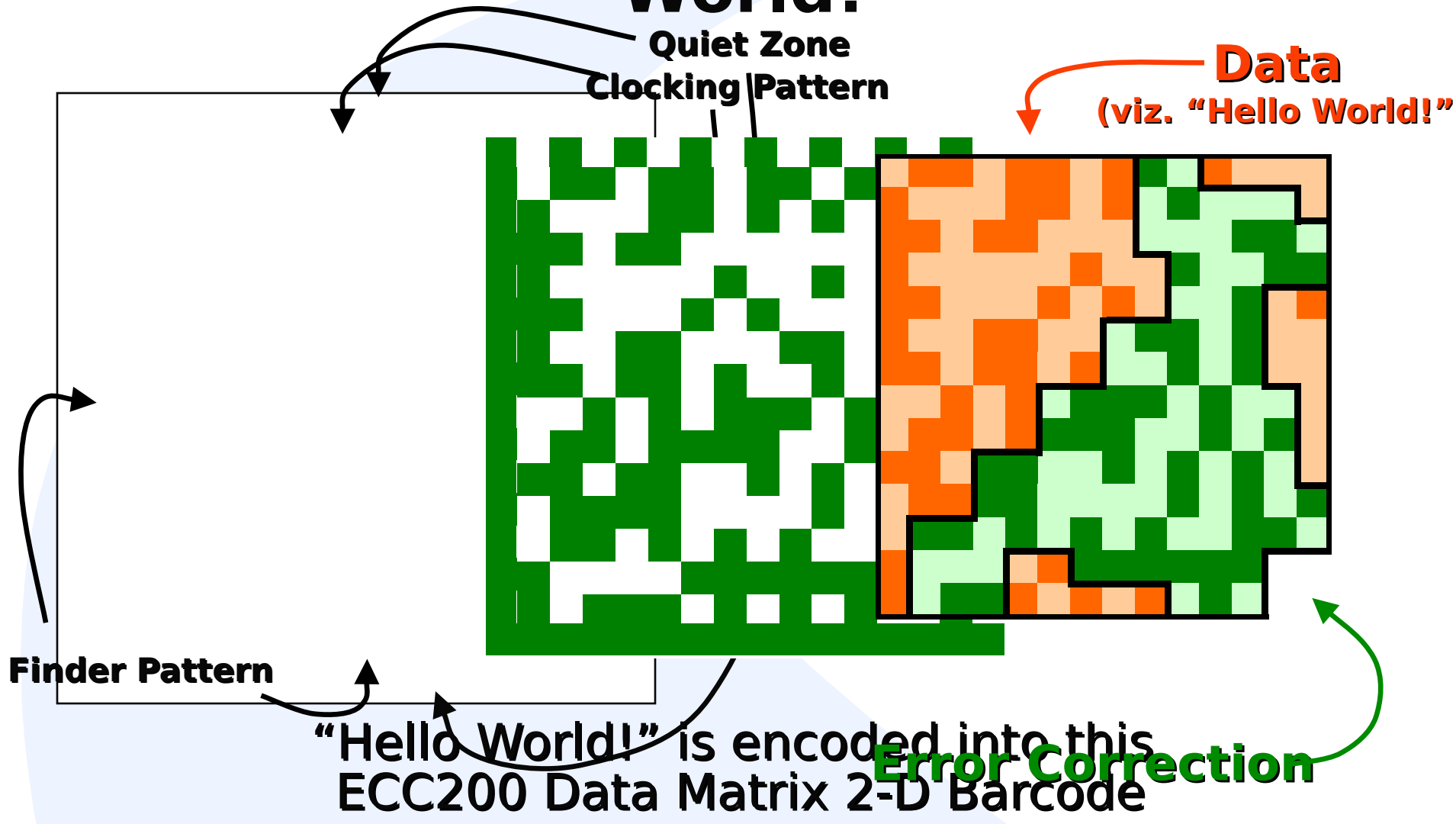
Passive RFID Tags

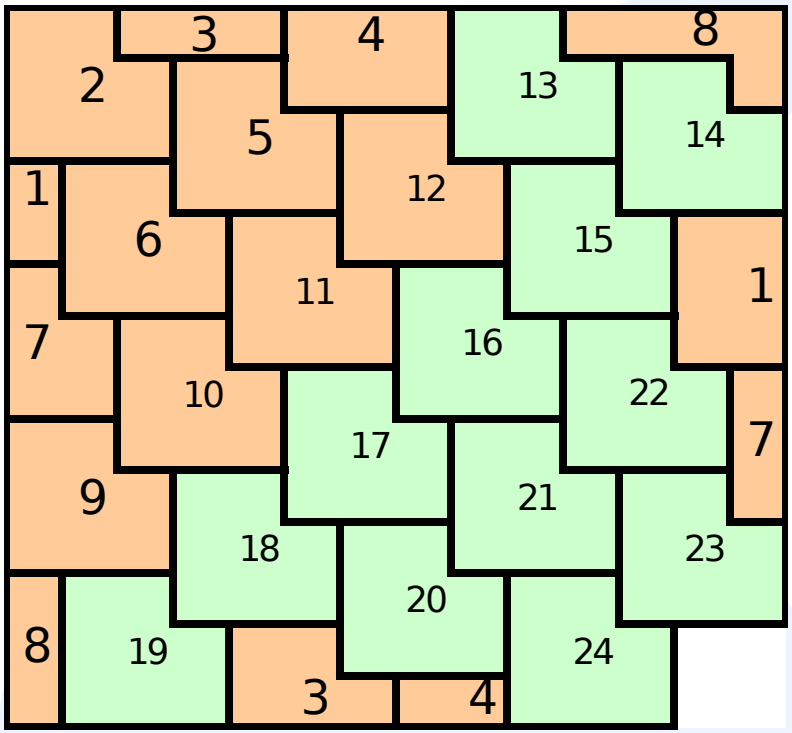


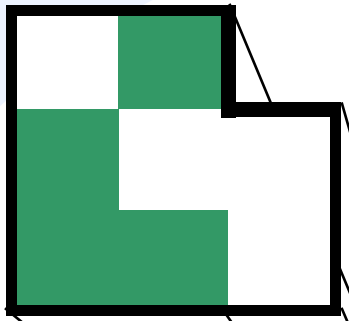
EPC RFID Tag

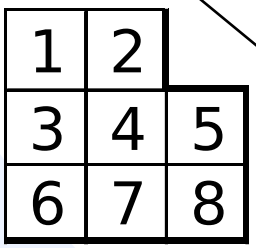
Active RFID Tags

Hello World!


Quiet Zone
Clocking Pattern
Data
(viz. “Hello World!”)
Finder Pattern
“Hello World!” is encoded into this ECC200 Data Matrix 2-D Barcode
Error Correction



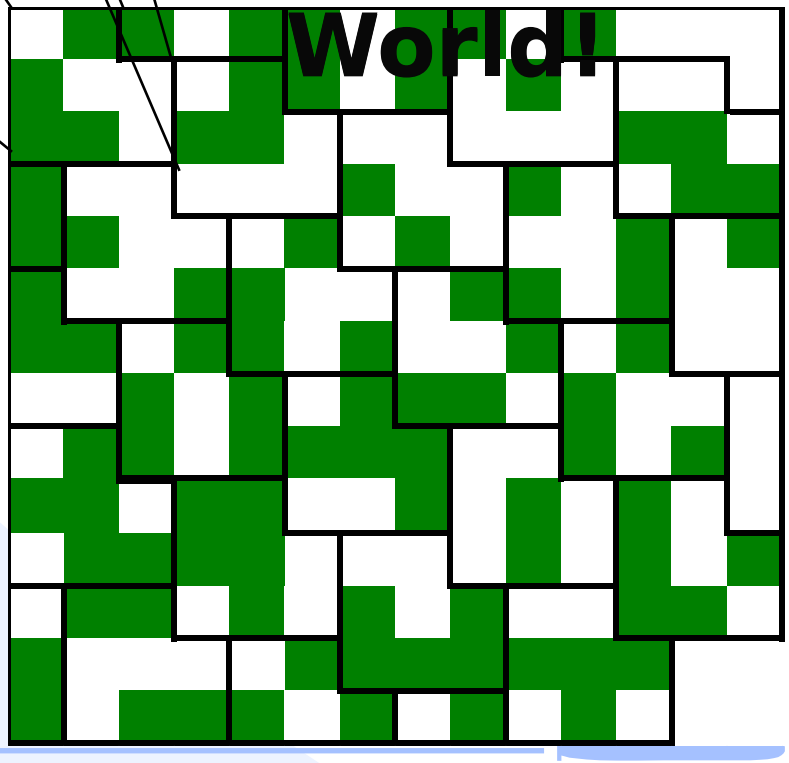




01100110 = 102

ASCII → “e”

Hello World!



A 16 x 16 Data Matrix holds

12 bytes with the data

&

12 error-correcting bytes